Math 116 (MA 116C) College Algebra Proposal

Equivalent to MATH 116

1. **Sample syllabus** (Same as MATH 116 proposal).

2. **Statement of how your course meets the Colonnade Plan's learning objectives.**

MA 116C: College Algebra (3 hours) meets the five learning objectives included in the Quantitative Reasoning section of the Colonnade Plan. MA 116C students will learn to interpret, illustrate, and communicate mathematical and/or statistical ideas. Further, students will learn to model and solve problems. Math 116 students will be able to: use fundamental mathematical reasoning principles; interpret information presented in tables or graphical displays; use graphical, symbolic, and numeric methods to solve practical problems; and apply an appropriate mathematical model to the problem to be solved. The content of the course will include:

- Introduction to Functions
- Linear and Quadratic Functions
- Polynomial and Rational Functions
- Exponential and Logarithmic Functions
- Systems of Equations

Students with a Math ACT of 26 or higher will receive 3 hours credit for this requirement.

MA 116C specifically meets the five learning objectives as detailed below:

Learning Objective 1: Interpret information presented in mathematical and/or statistical forms.

Students in MA 116C learn to interpret information presented in mathematical form by first learning to recognize the presence of mathematical information such as functions, equations, graphs, tables, diagrams, figures or descriptive text; and secondly, to accurately interpret how to use that information in the context of a given problem.

Learning Objective 2: Illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.

Students in MA 116C learn to illustrate and communicate mathematical information symbolically by learning when and how to use a mathematical expression, equation or function to express quantitative information.

Students in MA 116C learn to illustrate and communicate mathematical information visually by learning when and how to use a graph, figure or diagram to express quantitative information.

Students in MA 116C learn to illustrate and communicate mathematical information numerically by learning when and how to use tables to express quantitative information.

Learning Objective 3: Determine when computations are needed and execute the appropriate computations.

Students in MA 116C learn to determine when computations are needed and execute the appropriate computations through exercises that develop skill in carrying out algebraic procedures accurately and efficiently to solve problems.

Learning Objective 4: Apply an appropriate model to the problem to be solved.

Students in MA 116C learn to apply an appropriate model to the problem to be solved via exercises designed to teach recognition of which algebraic function, expression or equation (e.g. linear, polynomial, rational, logarithmic, exponential) appropriately models a given problem and to develop skill in performing such applications.

Learning Objective 5: Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

Students in MA 116C learn to make inferences, evaluate assumptions and assess limitations in estimation modeling via application exercises from finance, business, medicine and biology which require imposing "real-world" assumptions and/or limitations on procedures selected and inferences made from results.

3. Brief description of how your department will assess this course's effectiveness.

For MA 116C, assessment will occur at the end of the semester. To assess the course objectives, each student will complete a problem that addresses the five learning objectives. A committee of at least three faculty members will select a sample and evaluate the common assessment problem that addresses the skills and concepts as stated in the learning outcomes. The committee will randomly collect 25% to 30% of the sample across all sections of MA 116C to help assess students' mastery of the learning outcomes. The following criterion will be used to assess student learning outcomes:

Each test question will be scored on scale of 0 to 5, using a scoring guide developed by the committee in conjunction with the department. A common rubric (5 -Excellent ; 4 - Good; 3 - Satisfactory; 2 - Poor; 0 and 1- Fail).

The goals will be as follows:

Satisfactory = at least 70% of students scored 3 or better
Unsatisfactory = under 70% of students scored 3 or better

4. **If necessary, a list of any proposed revisions needed to bring your course in line with the Colonnade Plan.**

   MA 116C will be re-evaluated at the end of each academic year to determine if the learning objectives are being met, and will be updated accordingly.